EXHIBIT 2
DATE 4/13/2015
SB 18

Accuracy Specifications

The first problem one runs into when reading LiDAR manufacturer “accuracy specifications” is that they are normally reporting “relative accuracies” not “absolute accuracies” of their systems. Second, these accuracy specifications are usually quite conservative. For example, Aerial Services uses the Riegl VQ-480 Corridor Mapping LiDAR System. Riegl’s spec sheet for the system says that the accuracy for the system is 2.5 cm (1 sigma at 150m above ground). But this is 2.5 cm “relative accuracy” not an “absolute accuracy”. Relative accuracies will generally always be better (more accurate) than absolute accuracies for a given acquisition for reasons discussed below. Further, project deliverables are usually delivered with “absolute” vertical accuracies that meet certain ASPRS or NSSDA thresholds. If the specification was written using NSSDA guidelines it would be expressed at 2 sigma’s or “5.0 cm with a 95% confidence level”.

Further, this Riegl specification is expressed for a point cloud acquired at an unusually low altitude (150 meters above ground). Most projects are not flown this low and the absolute & relative accuracies degrade as the system is flown higher. How much less? This is not published with their specifications but it would degrade as altitude increased.

Other Components Added

The final accuracy of a point cloud (or the bare earth elevation model derived from the point cloud) is a product of the LiDAR “system” and a “production process”, and not simply the ranging from the laser. A modern LiDAR system has many other components (like a GPS sensor, inertial system, mirror, aircraft, etc.) that when integrated, calibrated, and operated together all contribute error to the ultimate accuracy of the point cloud. So to get to the bottom of the question of error we have to approach it from a systems and operational level and not only from an overly simplistic “laser” perspective.